

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT B. ELDRIDGE,
BRUCE B. RANDOLPH, and
RICHARD L. ANDERSON

Appeal 2007-0302
Application 10/062,858
Technology Center 1700

Decided: May 25, 2007

Before BRADLEY R. GARRIS, PETER F. KRATZ, and
CATHERINE Q. TIMM, *Administrative Patent Judges*.

KRATZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the Examiner's final rejection of claims 1-81, the only claims that remain pending in this application. We have jurisdiction pursuant to 35 U.S.C. §§ 6 and 134.

Appellants' invention is directed to a method for transporting hydrogen fluoride in an allegedly safe manner. A mixture of hydrogen fluoride (HF) and sulfone is employed and the mixture is conveyed within a container or a transportation means, such as a tank car or other portable vessel. Claims 16, 21, and 67 are illustrative and reproduced below:

16. A method for the transportation of hydrogen fluoride from a point of origin to a destination point, said method comprising the steps of:

adding at said point of origin a sulfone to the hydrogen fluoride to form a liquid mixture; and

thereafter transporting said liquid mixture by transportation means for transferring a volume of said liquid mixture from said point of origin to said destination point.

21. A method as recited in claim 16, further comprising:

separating at said destination point said mixture into a sulfone phase and a hydrogen fluoride phase.

67. A method for handling and transportation of hydrogen fluoride, said method comprising the step of:

transporting a mixture comprising hydrogen fluoride and sulfone by transportation means for transferring a volume of said mixture comprising hydrogen fluoride and sulfone from the point of origin to a destination point.

The Examiner relies on the following prior art references as evidence in rejecting the appealed claims:

Hutchinson	US 3,488,920	Jan 13, 1970
Oda (as translated)	JP 57-092502	Jun. 9, 1982
Wu	US 5,268,127	Dec. 7, 1993
Peterson	US 5,284,990	Feb. 8, 1994

Claims 1-7, 13, 14, 16-20, 46-50, 67-71, and 74-81 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu in view of Peterson. Claims 2-6, 8-12, 15, 21-45, and 51-66 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu in view of Peterson and Hutchinson. Claims 1-81 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wu in view of JP 57-092502 (Oda)¹ and Hutchinson.

We affirm the stated rejections.²

Concerning the Examiner's first and third stated rejections above, Appellants argue the claims subject to each of these rejections as a group. Therefore, we select claim 67 as the representative claim on which we shall decide this appeal as to each of these rejections.

Representative claim 67 is drawn to an HF transporting method wherein a volume of a mixture of HF and sulfone is conveyed via a transportation means from an origin (starting place) to a destination point or place.

Appellants acknowledge that HF is "typically transported by means of closed containers under pressure and generally under a blanket of pressurized nitrogen gas" (Specification 2).³ Wu discloses that "[d]iluting

¹ Our references to Oda are to the English language translation of record.

² This appeal is related to Appeal No. 1998-1163, which involved parent Application No. 08/448,696. We incorporate by reference the findings of fact and conclusions concerning the teachings of Wu and Peterson set forth in the Board Decision in that appeal, mailed August 23, 2001 (a copy of that Decision is attached to the Related Proceedings Appendix of Appellants' Brief).

³ It is axiomatic that admitted prior art in an applicant's Specification may be used in determining the patentability of a claimed invention and that consideration of the prior art cited by the Examiner may include consideration of the admitted prior art found in an applicant's Specification.

HF with tetrahydrothiophene-1,1-dioxide overcomes the fuming tendency of the HF and makes handling and storing the HF both easier and safer.

Further, even if the mixture is accidentally released from its containment facility, the HF tends to remain in the liquid solution rather than to form a dense vapor cloud” (col. 1, l. 65 - col. 2, l. 2).⁴

Appellants contend that employing a mixture of sulfone and HF in the conveyance of HF would not have been obvious to one of ordinary skill in the art from the applied references’ teachings. The Examiner contends otherwise. Consequently, a dispositive issue raised in this appeal as to the propriety of the Examiner’s first and third stated obviousness rejections is: Whether it would have been obvious to one of ordinary skill in the art to employ a sulfone in admixture with HF for transporting HF from one location to another? We answer that question in the affirmative. Hence, we shall sustain the Examiner’s first and third stated obviousness rejections.

The closed containers that Appellants acknowledge HF to be “typically transported by means of” (Specification 2) would have been readily recognized by one of ordinary skill in the art as including well-known portable vessels, such as a tank car or a truck. The Examiner cites and applies Peterson in the first stated obviousness rejection and Oda in the second stated obviousness rejection for showing that portable containers transportable by vehicles, including truck and tank cars, are well-known for use in the transportation of chemicals, such as HF. *See Peterson* (col. 1, ll. 41-47) and *Oda* (Translation 9). As we noted above, Wu discloses that

In re Nomiya, 509 F.2d 566, 570-571, 184 USPQ 607, 611-612 (CCPA 1975).

⁴ Appellants do not dispute that tetrahydrothiophene-1,1-dioxide (sulfolane) is a sulfone. *See Wu*, col. 1, ll. 49-51 and Appellants’ Specification 7 and 8.

sulfolane (a sulfone) can be mixed with HF during storage and handling of HF to keep the HF as a liquid and reduce the fuming thereof. Wu teaches this HF-sulfone admixture allows for the safer handling of HF and that, a further anti-corrosion additive, allows for the longer life of carbon steel equipment in handling HF (col. 1, l. 15 – col. 2, l. 49). Given these teachings of Wu and the well-known use of portable containers in transporting chemicals, such as HF, we agree with the Examiner that it would have been prima facie obvious to one of ordinary skill in the art to admix a sulfone (sulfolane) with HF for transporting the HF in a closed container for the expected safety advantages associated with HF storage and transportation in such an admixture.⁵

Appellants contend that: (1) Peterson teaches away from the here claimed subject matter by offering a replacement chemical (sulfuric acid) for HF in an alkylation process and evidences a long felt need for a safe HF conveyance method, which renders the Examiner's proposed combination of Wu and Peterson untenable; (2) Oda teaches using a pyridine-HF complex, which would not be suggestive of or furnish motivation for using sulfolane as taught by Wu and would work against combining Wu with the other applied references; and (3) the combination of Wu with Peterson does not teach/suggest all of the claim limitations.

We are not persuaded of any reversible error in the Examiner's obviousness assessments based on these arguments, as set forth in the Briefs.

⁵ Hutchinson, as further applied by the Examiner in the third stated rejection, further evinces that HF and sulfolane can be maintained as a mixture at a lower temperature, and then these chemicals can be separated from each other by increasing the temperature (col. 4, Table 1 and ll. 13-19).

As to the specific question of "teaching away," our reviewing court in *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994) stated:

[a] reference may be said to teach away when a person of ordinary skill, upon [examining] the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.

Here, Peterson's teaching of a replacement chemical for HF for use in an alkylation process does not rise to the level of a general teaching away from the use of HF. Rather, one of ordinary skill in the art faced with the desire to use HF for its properties and the known safety problems associated with handling and transporting this hazardous chemical would have been led to consider the available known options of mitigating these safety concerns, including the option of employing a mixture of HF and sulfolane to decrease the dangers of handling HF as taught by Wu. Similarly, the pyridine-HF complex option disclosed by Oda does not serve to detract from the Wu teaching/suggestion of using sulfolane and HF in admixture for safely handling (including transporting) HF. As for the argued long felt need, we are not persuaded that the teachings of Wu would have been overlooked by one of ordinary skill in the art in fulfilling the need for improving the safety of HF handling and transportation by the rather thin assertion of a long felt need based on Peterson. After all, Peterson does not represent the only prior art with respect to HF transportation and handling. In this regard, the level of skill in the art is also reflected by the teachings of the other prior art of record, including Wu. Moreover, our reviewing Court has long held that a teaching, suggestion, or motivation to combine the relevant prior art teachings does not have to be found explicitly in the prior art, as the teaching, suggestion, or motivation may be implicit from the prior art as a

whole. *In re Kahn*, 441 F.3d 977, 988-89, 78 USPQ2d 1329, 1336, cited with approval in *KSR Int'l. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007). Here, there is ample reason for an ordinarily skilled artisan to employ sulfolane in admixture with HF during transportation of HF, such as for keeping the HF as a liquid and for reducing the tendency of the HF to fume. These are both predictable and desirable results as taught by Wu.

Concerning Appellants' arguments with respect to containment pressure, maintaining a vapor space in the transportation vessel or level of filling of a transportation vessel, we note that Appellants have not argued the appealed claims separately with respect to the Examiner's first and third obviousness rejections and the selected representative claim 67 does not require a particular vapor space or pressure or a particular partial pressure of HF in a closed transportation container.⁶ Nor have Appellants otherwise satisfactorily explained why selecting a transportation containment vessel pressure and headspace volume would not be within the ordinary skill of the art upon routine experimentation to determine the operable and optimum values for these parameters.

Having reconsidered the Examiner's first and third stated rejections in light of Appellants' arguments in the Briefs, we remain of the view that representative claim 67 embraces subject matter that would have been obvious to one of ordinary skill in the art from the combined teachings of the

⁶ Appellants have the burden of specifically pointing to any particular rejected claim(s) that they desire to have separately considered with respect to a particular rejection that involves a group of claims and explaining why or how the limitations of any such claim patentably distinguishes that claim over the applied references. Here, Appellants argue the Examiner's first and third stated obviousness rejections as a group and we have selected claim 67 as representative. *See* 37 C.F.R. 41.37 § (c)(1)(vii) (2006).

references as applied by the Examiner. Accordingly, we affirm the Examiner's obviousness rejection of claims 1-7, 13, 14, 16-20, 46-50, 67-71, and 74-81 over Wu and Peterson and the Examiner's obviousness rejection of claims 1-81 over Wu in view of Oda and Hutchinson.

Regarding the Examiner's separate rejection of claims 2-6, 8-12, 15, 21-45, and 51-66 under 35 U.S.C. § 103(a) as being unpatentable over Wu in view of Peterson and Hutchinson, we note that Appellants do not argue the rejected claims separately. Thus, we select claim 21 as the representative claim.

Claim 21, depends from claim 16, and requires separating the sulfone/HF admixture into a sulfone phase and an HF phase at a destination point after forming an admixture of HF with sulfone at an origin point and transporting the admixture to a destination point via a transportation means.

The Examiner additionally relies on the teachings of Hutchinson to show that sulfone (sulfolane) is readily separable from a mixture with HF by raising the temperature of the mixture. *See* Example 1 of Hutchinson. Appellants additionally maintain that separating HF from sulfone after transportation to a destination point from an origin point is patentable over Hutchinson (Br. 7). However, the Examiner's rejection is not over Hutchinson alone. Rather, the rejection is based on the combined teachings of Wu, Peterson and Hutchinson. Further, Appellants contend that improper hindsight is at work in this rejection and that Peterson establishes the lack of combinability of Wu with Peterson and Hutchinson, as proposed by the Examiner (Br. 8; Reply Br. 4). These unembellished arguments are not persuasive for substantially the same reasons as Appellants' remarks about the Examiner's first stated rejection were not found persuasive.

In considering the question of the obviousness of the claimed invention in view of the prior art relied upon, we are guided by the basic principle that the question under 35 U.S.C. § 103 is not merely what the references expressly teach but what they would have suggested to one of ordinary skill in the art at the time the invention was made. *See Merck & Co., v. Biocraft Labs., Inc.*, 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir. 1989) and *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). That is, the question of obviousness cannot be approached on the basis that an artisan having ordinary skill would have known only what they read in the references, because such artisan is presumed to know something about the art apart from what the references disclose. *See In re Jacoby*, 309 F.2d 513, 516, 135 USPQ 317, 319 (CCPA 1962). Nor is it necessary that suggestion or motivation be found within the four corners of the references themselves. Indeed, a conclusion of obviousness may be made from common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference. *See In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969). As explained above, we have no doubt that the nature of the problem to be solved (HF handling and transportation) and the level of skill in the art as indicated by Wu (adding sulfolane to HF decreases fuming and keeps HF as a liquid) and as further evinced by Hutchinson (sulfolane can be kept in admixture with HF at one temperature and separated from HF at a higher temperature) would have led one of ordinary skill in the art to use sulfolane in admixture with HF during HF transportation and would have led one of ordinary skill in the art to separate the sulfolane from the desired HF transported product at the receiving end, as here claimed. After all, in an

obviousness assessment, skill is presumed on the part of the artisan, rather than the lack thereof. *In re Sovish*, 769 F.2d 738, 226 USPQ 771 (Fed. Cir. 1985).

Consequently, we shall also affirm the Examiner's second stated obviousness rejection of claims 2-6, 8-12, 15, 21-45, and 51-66 as being unpatentable under 35 U.S.C. § 103(a) over Wu in view of Peterson and Hutchinson.

CONCLUSION

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2006).

AFFIRMED

tf/ljs

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